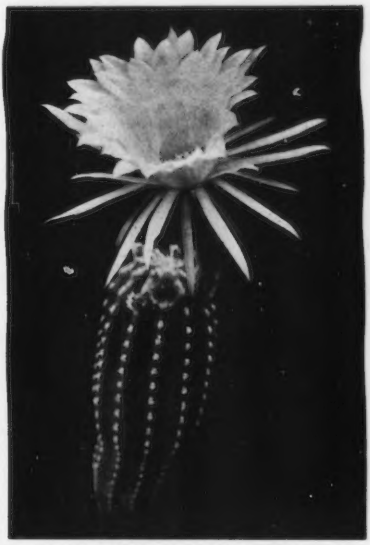
Office Copy

CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society

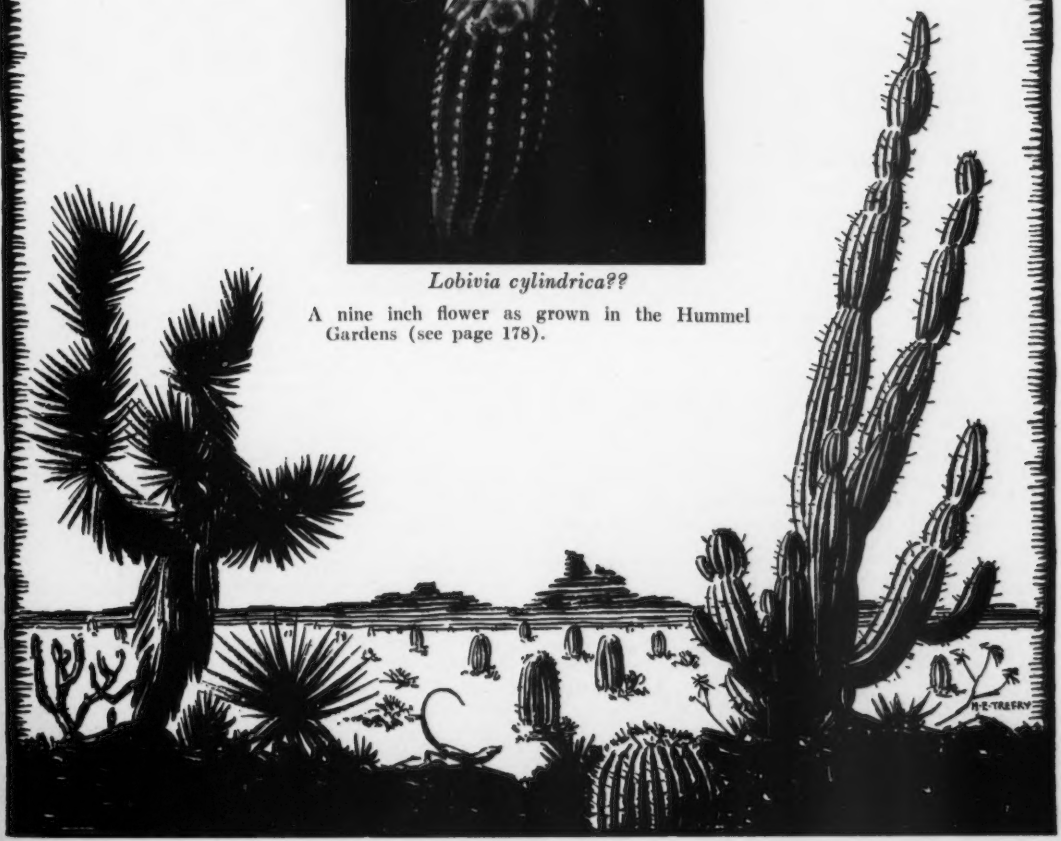
Of America

VOL. VI JUNE, 1935 No. 12



Lobivia cylindrica??

A nine inch flower as grown in the Hummel Gardens (see page 178).



CACTUS AND SUCCULENT JOURNAL

Published and Owned by The Cactus and Succulent Society of America, 6162 N. Figueroa St., Los Angeles, California (Mail Address Only). A monthly magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. (Membership and subscription $3.00 per year. Foreign $3.00 per year by International money order.) Mail application to Scott Haselton, *Editor*, 6162 N. Figueroa St., Los Angeles, Calif. *Editorial Staff*: Edgar M. Baxter, Bellflower, Calif.; Clarence L. Clum, 2443 Echo Park Ave., Los Angeles, Calif.; Eric Walther, 2667 McAllister St., San Francisco, Calif.

VOL. VI JUNE, 1935 No. 12

CONTENTS

Lobivia cylindrica ..... E. C. Hummel 177

Frick's Notes ..... G. A. Frick 178

Florida Cacti, *Cephalocereus keyensis* ..... J. D. Mitchell 179

Kalanchoe blossfeldiana ..... von Poellnitz 183

Britton and Rose Reprint, Vol. II, Sixth Installment ..... Center Section

Collecting Succulents in Mexico, Part IV ..... Eric Walther 185

Seventh Annual Cactus Show ..... Scott E. Haselton 190

LOBIVIA CYLINDRICA??

(See front cover)

This flower measured nine inches in length, nine inches across from tip to tip of outer perianth-segments, six and one half inches from tip to tip of inner perianth-segments. The tube is an Echinopsis tube, being only 12 mm. wide at the narrowest point and 3 cm. wide at the top. Suggestions as to the correct identification will be gladly received.

This also proves that seed collected in South America may have been collected from private gardens. E. C. Hummel.

FRICKS NOTES

There are 68 species of cactus found growing naturally in the state of Arizona. Thirty-three of these are Opuntias, while the balance is made up of 12 different genera.

Texas is the cactus empire of the United States. There are 96 species and 23 native genera occurring there.

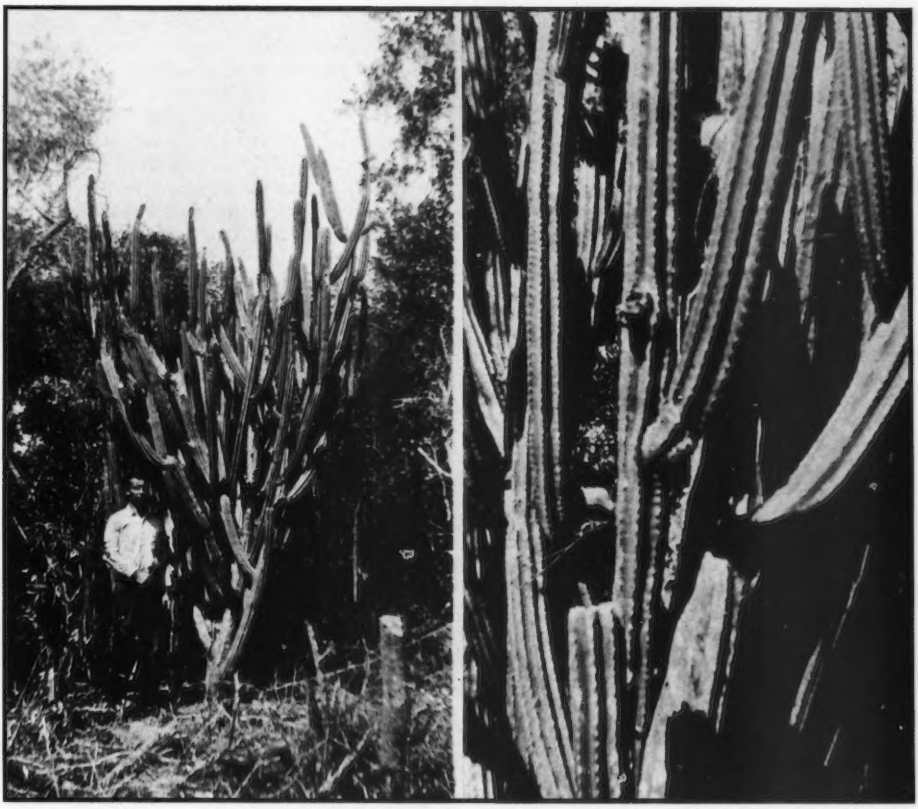
Planting of cacti gardens in the area belonging to the Carlsbad Caverns National Park in New Mexico is successfully checking soil erosion and at the same time furnishing an opportunity to the thousands of annual visitors to become acquainted with the native flora.

Mr. Pirtle of Pirtle and Son, Texas cactus dealers, informs us that *Astrophytum asteria* are now very nearly extinct in the Rio Grande Valley of that state. Finding one plant in a two days search is considered a satisfactory result.

The five and ten cent stores have placed another order for two car loads of Texas cacti. These will be sold in the eastern states and Canada this summer. They were gathered with the same disregard for mutilation as the previous consignments.

Have you ever taken into consideration the fact that water climbing 30 to 50 feet to the top of the *Carnegiea gigantea* accomplishes the apparent paradox of flowing uphill? The amount of upflowing pull with force has been calculated by three scientists, Dr. Clyde Homan, Dr. T. F. Young, and Prof. Chas. A. Schull of the University of Chicago. They have found that a column of pure water under the low relative humidity which desert plants have to endure, can withstand without breaking, a pull of many tons per square inch. This pull has been given the name "Stromogenic tension." According to the formula discovered by the scientists, the stromogenic tension of a column at 68 degrees Fahrenheit and 10 per cent relative humidity is in the neighborhood of 45,000 pounds per square inch or 22.5 tons.

Drs. S. Z. Orgel and J. Tuckman of the American Orthopsychiatric Assn. of New York informs us that children's nicknames in 95 cases out of 100 lead to resentment, ill feeling, and fighting. These scientists studied the nicknames of 235 boys and 75 girls of average normal intelligence. Nicknames of boys and girls are not the only ones that will start a fight. With a "5 and 10 cent store" acquired cactus nomenclature, just step into the garden of any cactophile and ask to see his Devils pincushion, rat-tail cactus, crab-cactus or strawberry cactus and see what happens!



Cephalocereus keyensis Photo by J. D. Mitchell.

Florida Cacti

I. *Cephalocereus keyensis*

By J. D. Mitchell

Having wished for some time to tell our Society members about certain of our Florida cacti, I have been delayed for only two reasons. One is the lack of time, and the other my ignorance of how to *start* to tell it. I was reading a short time ago a well written and appealing article by Mr. G. A. Frick in the January, 1935, issue of the Journal, page 102.

This article on conservation brought again to my mind the novel way in which Mother Nature seems to have provided for the perpetuation of certain species of the flora and fauna of the Florida Keys, through a three-way partnership. Strange as it may seem, this partnership really exists, and it works to the benefit of all concerned. I might add here that certainly one would never find rags, nor an old tire hanging on one of our Cephalocerei, such as the photograph showed which accompanied Mr. Frick's article mentioned above; the plants are too inaccessible for that.

Their conservation here seems to be a much easier problem for several reasons. One is that they grow too far from the "beaten path," and another very convincing reason is Crotalus adamanteus, more frightfully known as the Diamond Back Rattlesnake. It is only the thought of a thing that causes the fear

of it, and the hammocks of the Florida Keys are well populated with Crotalus. I have many times observed (and I admit with some satisfaction) that the existence of so many rattlesnakes in these hammocks is the reason why many would-be collectors do not make more thorough searches for the *Cephalocereus*. This is where the partnership comes in. The Cephalocerei are afforded a great deal of protection, much of it through the presence of the rattlers, but the snake seems to get no protection except some people's fear of him, and the seclusion of his habitat.

The other side of the partnership rests with the Opuntias, *O. keyensis, O. dillenii,* and *O. inermis,* in that they protect the deer on these Keys. A hunter would not take a dog into thickets of Opuntias, knowing what would happen to the dog, and hunting deer without a dog is something that isn't done. So what deer have been driven to these islands by the bloodthirsty hunters on the mainland, are protected by Mother Nature, at least for the time being. Here you have the fear of a reptile helping protect one of the most beautiful masterpieces of the Creator's handiwork, the *Cephalocereus;* and the lowly but dreaded *Opuntia* certainly saving the lives of one of our most beautiful animals. Quite a unique partnership, is it not?

Since this is not a treatise on reptiles, I had better say something about our *Cephalocereus keyensis.* The impression that this plant does not now exist on the Florida Keys is probably due to the statement in Britton & Rose that "The plant is now very nearly exterminated on Key West, owing to the necessity for military purposes during the war with Germany of clearing the hammock in which it grew. Dr. Small succeeded in establishing it in flourishing masses in the cactus garden of Mr. Charles Deering at Buena Vista, Miami, Florida."

However, I can say that few know the exact spots where this cactus grows since it was cleared off the island of Key West during the World War. Key West is only one of the three islands where this beautiful plant grows, the others being Boca Chica Key, about 14 miles east in the chain from Key West, and Big Pine Key, which is about 35 miles east of Key West. I have heard that the plants transplanted by Dr. Small, referred to in Britton & Rose, all came from Key West while the hammocks there were being cleared, but am not sure of this. I only know that one would certainly have a Herculean task should he undertake to remove all the *Cephalocereus keyensis* from the hammocks on the other Keys above mentioned. I have been told by natives of the Florida Keys that this "Giant Cactus" also grows on the Saddle Bunch Keys, but have as yet been unable to verify this statement.

The *Cephalocereus keyensis* in the accompanying photograph stands 18 feet, 5 inches from ground to the tips of the two tallest branches, which lean a trifle to the west (in greeting to the Californians!) The main trunk is a fraction over 8 inches in diameter at a point twelve inches from the ground, and another trunk slightly smaller is located about a foot behind it, in photograph. The fallen piece of branch, which must have struck the ground many years ago, and from which this great tree has grown, is plainly discernible in the humus. Only two suckers arose to make the giant in the picture.

The photograph was taken of this particular plant because it was in a less dense growth of hammock than other *Cephalocereus* of about the same size, and for another reason which I will explain. Consequently much less work was required in clearing the hammock to get a good light for photographing. Within a radius of 200 feet of this giant plant are many brothers of probably the same age, with only a little less height and spread, not to mention the impenetrable masses formed by many seedlings, and suckers that have arisen from pieces broken off in tropical hurricanes.

The other reason I have not given the readers of the JOURNAL a photograph of a much larger and taller plant which grows in one of these hammocks is my intense love for the plants themselves and fear of injuring even one of them by clearing away too much of the dense growth, since they love shade. I have seen cultivated specimens badly injured by exposure to too much direct sunlight I therefore selected the largest plant that could be found growing in a more lightly wooded section of a certain hammock, this plant being used to a bit more light than others, to begin with. However, the "few" trees, some of them nearly as well equipped with spines as the cactus itself, that were cleared away to make this picture, required nearly four hours of work with a good machete. The clearing was made in the shape of a piece of boarding-house pie (not half a pie, or semi-circle) the cactus being at the apex, or pointed end. The result is

a fair picture, and this is the first I have ever made of a large plant, for fear, as stated above, of getting too much sunlight on a large specimen, and causing injury.

Britton & Rose, in "The Cactaceae," Vol. II, page 40, describe *Cephalocereus keyensis* as being little branched. Their photograph is of a much smaller plant than the one herewith. Their statement concerning erectness of the branches is certainly true, as will be noted in any photograph of *C. keyensis.* However, the branches of *C. deeringii* are still more erect, and closely appressed to the main trunk. Some of the branching of *C. keyensis* may be due to suckers arising at and below points where the branches were broken off in wind-storms. I wish to say, that through much observation, I find *C. keyensis* to be a prolific branching species in comparison with other species of the genus *Cephalocereus,* and it will be seen that the greater part of the branching in the plant photographed herewith is not due to broken trunks or branches.

One quickly noticeable feature of these Cephalocerei is that they very seldom raise their branches higher than the surrounding trees, as any branches that rise above the rest of the flora are broken off in not being afforded the protection from winds which the lower parts of the cactus have.

In cutting into some unhealthy appearing branches of *C. keyensis,* one often finds myriads of intensely black ants living in the hollowed out, though still alive stems. These ants are a sure sign for your quick retreat. I have noticed these pests for sometime, but do not find that they make any headway in destroying a quantity of the cactus, as they do with other members of the vegetable kingdom.

In the lower left part of the close-up photograph may be seen an unexpanded flower of *Cephalocereus keyensis.* By looking closely, one may observe the tip of the style scarcely pushing its end through the unopened floral envelope. A peculiarity of these flowers is that they have an odor strongly resembling that of garlic. They open in the late afternoon or evening. Next morning the garlic scent is not present. The flowers are a bit long for their width, and are brownish purple. The flower in photograph is surprisingly low on the branch; most of them appear on newer growth and nearer the tips of the branches. However, finding the flower in this position made it somewhat easier to photograph, but the snapshot was taken while the author was perched in a torchwood tree (Amyris elemifera) 16 feet from the plant photographed, using a special camera lens to get the close-up.

In rendering this account of one of our rarest and most beautiful native cacti, I will not go into details concerning the many phases of travel necessary to find one's way into the hammocks where *Cephalocereus keyensis* grows, nor an account of the many other things of interest to the naturalist in the surrounding country. I will only ask our kind Editor for a little more space in the JOURNAL in which to mention something of great interest concerning these Cephalocerei, which I am sure many of us had never given thought to.

Some years ago, in January, 1927, to be exact, one of our most eminent botanists, and one who is very familiar with the Florida Keys, having written a Flora of that region, made the following interesting statement during the course of a lecture on cacti at the New York Botanical Garden:

"Another group worthy of mention is semi-epiphytic, or more strictly speaking, petrophytic. This condition is well illustrated by the two tree-cacti (*Cephalocereus*) of the Florida Keys. Their habitat provides (or allows) boundless room for the aerial parts, but very little for the subterranean. The ponderous succulent trees grow on the plate-like surface of the oolitic limestone in the case of *Cephalocereus deeringii,* and of the coral limestone in the case of *C. keyensis.* The root system of these plants compared with the aerial parts is almost negligible. Whatever soil is present to cover the roots is largely humus. Very likely a friendly mycorhiza helps in the remarkable growth of the plant."

Needless to say, I can add nothing to the above. It is directly to the point, and describes the root and soil condition of the *Cephalocereus* exactly. The amount of this humus is very little, sometimes being as much as 6 or 8 inches deep, depending on the number of trees and shrubs that have sprung up in a certain hammock. Surrounding these plants are Wild Cotton (Gossypium hirsutum), the Stopper Tree (Anamomis dicrana), Yellow Wood (Schaefferia frutescens), the Fiddlewood (Citharexylum fruticosum), Velvet Seed (Guettarda elliptica), Beef Tree (Torrubia longifolia) and others. Sometimes the lower part of the *Cephalocereus* is draped with

Spanish Moss (Tillandsia usenoides). Many of these cacti, besides furnishing a place of anchor for other members of the Bromeliad Family, such as species of Catopsis and Tillandsia, of which quite a number are native to the Florida Keys, are sometimes found more or less covered with a light bluish fungus, which seems to do the cacti little harm.

Before closing I should like to make an observation as to why the Cephalocerei grow on our Florida Keys—how they came to be there, hundreds of miles from their nearest relatives. Many of the oldest inhabitants of the Keys positively assert that the plants were brought in there years ago by early settlers, but I deem this to be not only improbable, but impossible, as to establish a plant so thoroughly, would require a long time, much closer to the dawn of history that some of us possibly realize.

I believe I have worked up a fair case in favor of a theory that Florida and Mexican peninsula of Yucatan were once joined together. At least, I have convinced myself of this, which is something accomplished, but have not propounded this theory outside the immediate family for fear of being subjected to a mental test to ascertain my sanity.

Before we throw out this theory as impossible, let's do a little lesson in geography. On any good map of the West Indies you will find that it is only a trifle over 375 miles from Key West to Cabo Catoche and Isle de Contoy, on the immediate coast of Yucatan. Approximately half way between Key West and Yucatan is the western part of Cuba, with plenty of cacti. Cuba, Porto Rico and many other West Indian islands have practically the same geologic formations as the Florida Keys.

Now *Cephalocereus gaumeri* is native to Yucatan, and its growth characteristics closely resemble those of *C. keyensis.* The two species attain to approximately the same height, *C. gaumeri* being more slender; the spines of both species are about the same in length, are the same in number, both are acicular (needle-like) and nearly the same color. A comparison of the flowers of *C. gaumeri* and *C. keyensis* furnish more interesting facts, being nearly the same in length; inner perianth segments acute or acutish; styles exerted. The styles tell more than any other floral part, in this conjecture. A recently written flora of Mexico lists about five other species of *Cephalocereus* as being native to the states of San Luis Potosi, Vera Cruz, and Eastern Mexico in general, but I here mention *C. gaumeri* because of its being indigenous to Yucatan and so closely resembling *C. keyensis.*

The probable evolutionary relationships as given in Britton & Rose place *C. gaumeri* farther down the list than *C. keyensis,* which means the former is more highly developed. This supports the theory of geologists that the entire earth was once covered with tropical vegetation. It seems the Mexican cacti have, since that distant time, carried out their evolution in a different direction, and that the two species of Cephalocerei now on our Florida Keys are the remnants of a once great forest of similar tropical growth, not having been called upon to adapt themselves to the arid conditions such as prevail in Mexico.

Can it be that the Gulf of Mexico was once a great inland lake, before the existence of the Mississippi River, and land once stretched from Florida to Yucatan, by way of Cuba? I think the presence of Cephalocerei on the Florida Keys ably supports this theory. There is no very deep water now in that imaginary line we have drawn from Florida to Yucatan. Also, let us not forget that *Cephalocereus royenii* grows in Porto Rico on limestone beds of the same geological epoch, the humus also being present to cover the roots as in the case of our Florida plants.

At any rate, there is a lot of room for thought on the above, and since thought, when in the right direction, does no harm, I wonder what more experienced botanists and students of nature think about this. If you feel that I have gone a little too far, don't fail to speak out!

The 4th annual meeting of the Garden Club Federation will be held at the El Cortez Hotel in San Diego, June 14th, 15th, and 16th.

The San Diego Floral Association will be host to the Federation meeting. This will give garden lovers everywhere a chance to visit San Diego, the Exposition, and at the same time the Garden Club meeting.

Visits will be made to beautiful gardens in and around San Diego and many places of historic interest will be visited.

During the Federation meeting many interesting lectures will be given on garden subjects.

The management of the Exposition has designated Sunday, June 16th, as a special day on the Exposition grounds for the California Garden Club Federation.

Hotel reservations should be made direct with the hotel, but delegates should register with Mrs. Richard Kirkley, Chairman of Arrangements, 432 South Serrano, Los Angeles, California.

FRANK J. McCOY.

Kalanchoe blossfeldiana von Poellnitz

(Kalanchoe globulifera Perr. de la Bâthie var. coccinea Perr. de la Bâthie)

According to rules of botanical nomenclature a variation of a plant species should differ only in a few characteristics from the type itself. Dr. von Poellnitz, a specialist for succulent plants, observed that the well known *Kalanchoe globulifera* var. *coccinea* differs in nearly all characteristics from the type. After careful comparison of living plants with the description of *Kalanchoe globulifera* and its variety *coccinea* published in Arch. de Bot. II, Bull. Mens. 2 (1928) à Caen, (pages 25 and 26), it proved necessary to describe this variety *coccinea* as a separate species. The new name *Kalanchoe blossfeldiana* was given in honor of the distributor of this plant, Mr. Robert Blossfeld, Potsdam.

It would be well to make known that the growers of *K. blossfeldiana* in Germany have sold their plants generally just when buds were showing color. But much better prices might be obtained if the plants were sold when flowers are fully developed. As flowers of *K. blossfeldiana* keep in full beauty for two months without fading, there is no risk in selling plants with fully opened flowers.

Also the germination of seeds seems to have caused some trouble here and there. But this trouble is the consequence of unsuitable treatment or negligence only. If no good germination is obtained the seedflat has been kept either too wet or a bit too dry. It is said that the germination of *Kalanchoe* seeds is a challenge for a florist, but in my opinion it is only a test for the ability and carefulness of florists, as such fine seeds need only some special care until germination is perfected. Last spring I placed some *K. blossfeldiana* plants, having nearly finished their flowering period, in an outdoor succulent group. Probably seeds were produced freely, because they germinated like weeds at the bottom of the plants in ordinary sandy soil.

K. blossfeldiana does not need big pots, as it has a rather small root-system. During the past years we have learned that it is not necessary to grow several plants potted up in one pot. If seeds are sown in the first months of the year, single plants will get big enough and will easily make large bushy plants. In spite of its succulent character the plant can be grown in the first summer months in about the same compost which is used for Chrysanthemums. Only the last potting must be done in a real well drained succulent compost, i.e. no addition of fertilizer. In this way plants will grow very big and will not rot in the winter. Leaves also should never become wet in winter and the minimum temperature should be 48° Fahrenheit. Do not think that this plant must be grown hot because it is of Madagascar origin. It grows in Madagascar on high-mountains in a rather cool temperature, and the optimal temperature should be around 60° Fahrenheit during spring and summer. In order to get fine compact potplants, as much light as possible should be given in winter; otherwise the flower spikes grow too long.

Kalanchoe blossfeldiana von Poellnitz

In the current year extensive trials have proved that *K. blossfeldiana* grows extremely well when planted out and cultivated in cold frames during the summer. By this method plants grow much quicker and are better branched than when grown in pots for the summer months. They should be potted up by the end of September in not too large pots, using a compost not containing any fertilizer, just a compost fit for growing succulent

plants. But after potting plants should not be kept in a close and damp atmosphere. Good ventilation must be given immediately.

Much is written in the horticultural press about the propagation of *Kalanchoe*. From my own experience, and in accordance with the experience of the most successful growers, a propagation by cuttings is not fit for commercial cultivation. For this purpose the plant must be propagated by seed, which method is also much cheaper. A successful propagation by cuttings is greatly retarded as the plants owing to their enormous floriferousness will produce suitable cuttings only very late in the summer. Consequently plants from cuttings will never reach the size of plants grown from early sowings.

Also as a cutflower *K. blossfeldiana* is of real value, as the flowers are very graceful, they have a brilliant scarlet color and keep for a very long period, outclassing any other cutflower. Flowering branches keep about two months in full beauty.

Never before has a horticultural novelty created such a sensation and has been accepted with the same enthusiasm from nurserymen and florists in all parts of the world as has been this wonderful Crassulacea. The flowering period falls in the first months of the year. The first flowers from January sowing are opening in the middle of January of the next year. Later sowings, which can be made until middle of July, give somewhat smaller plants, which will flower from Easter until Mother's Day and even until the end of May.

The easy and cheap cultivation, the floriferousness, the brilliant scarlet flowers and the astonishingly long time which the flowers keep without fading, are making this plant without any doubt one of the most valuable new winterflowering potplants in existence.

NEW BOOKS

CACTUS by A. J. van Laren, translated from the Dutch by E. J. Labarre. Bound in servicable art cloth and contains 150 natural color illustrations. A companion book to SUCCULENTS. Abbey San Encino Press, 6162 N. Figueroa St., Los Angeles, Calif. $5.00 (Now ready for delivery).

One needs a good plough for fallow land. No better plough has come to my attention for fertilizing the field of Cactus interest than the new book called CACTUS written by A. J. Van Laren and published by Scott E. Haselton, Editor of the CACTUS JOURNAL of The Cactus and Succulent *Society of America.*

The typography and architectonics of the work are examples of perfect art, and the large type used is a great comfort to those whose eyes are no longer young.

The use of the Britton and Rose nomenclature, which has spread throughout the cactus world, with the exception of some German writers, further endears it to the reader. Note here, that Curt Backeberg, the most useful of German authors, is an outstanding example of popularity gained by perfecting the Britton and Rose system.

CACTUS is a worthy volume, not only to the beginner, to whom its chief appeal is made, but to those of longer training. Recently a question arose which illustrates this point. A shipment of a Cephalocereus was brought in under the name of *C. leucocephalus.* Turning to page 15, a beautiful colored picture, of which there are 150 in the book, proved that that name was wrong, and enabled your reviewer to determine the plant, as, *C. alensis.*

The work is a splendid companion to van Laren's former book SUCCULENTS.

This makes the fifth of the series of botanico-horticultural works, beginning with the magnificent STAPELIEAE, by Sloane and White, down to the "just off the press" CALIFORNIA CACTUS, by Edgar M. Baxter, a definite Southern California institution or school of Botanical Culture, surrounding the Abbey San Encino Press.

It is a limited edition which cannot be extended, and those who desire it must avail themselves of it immediately. DR. ARTHUR D. HOUGHTON.

QUESTIONS

The University of Pennsylvania is perplexed by the appearance of black spots on some of their Aloes. Although the plants seem to suffer no harm we would like to know the cause.

W. L., *New Jersey.*

This is a question for plant pathologists to determine, but it seems to be a fungus caused by unhealthy and unnatural growing conditions.

CARL PFADENHAUER.

I note that A. J. van Laren in his SUCCULENTS *lists a plant which he calls Bryophyllum tubiflorum. I note that Dr. Chas. Swingle in an article in* DESERT *called it Kalanchoe tubiflorum. Which is correct?*

The correct name is *Bryophyllum tubiflorum.* Dr. Swingle does not recognize the division of *Bryophyllum.* The Bryophylla are the Kalanchoes that produce plants on the leaves. Berger did a great amount of work on this group of plants.

CARL PFADENHAUER.

NEW PRICE LISTS

Wright M. Pierce, 313 West 3rd St., Claremont, Calif. Eight page list of RARE CACTI AND SUCCULENTS, 13 illustrations. Emphasizing the conservation of desert plants by growing seedlings. Four groups of plants: *Neomammillaria, Cereus, Echinocactus* and *Echinopsis, Lobivia*; arranged by price under each group. A page of cactus culture makes this list of especial importance. *(Free by mentioning the* JOURNAL*).*

The following 8 pages are the sixth installment of Britton and Rose "The Cactaceae" Vol. II.

Chapel of Hacienda San Diego de Los Alamos, Puebla, collecting ground of Brother Arsene Brouard.

Collecting Succulents in Mexico

By Eric Walther

Part IV.

All photographs by Author

Like all things, this trip of ours to Mexico too, almost too good to be real, had to come to an end sometime. Without entering into tiresome details here of our return home beyond stating that we covered the distance ***from Mexico City to Los Angeles between dawn and dusk of a single day, a brief summary*** may be submitted of the results obtained in our stay of 27 days. This summary is merely a superficial survey and does not pre-

Echeveria rubromarginata growing in Plaza at Puebla.
Rio Atoyac at Amatlan near Puebla, where *E. rubromarginata* was found growing wild.

tend to anything like finality, either as to taxonomic or other fields. Nomenclature of the material collected in particular must await the flowering here of the plants brought home, so that all names now used should be considered as strictly provisional.

SUMMARY:

1. *Echeveria* in its native home is actually rather scarce, as far as the number of plants seen, few of the colonies found consisting of more than 100 plants of the particular species.

2. These colonies of Echeveria-species too are very localized and isolated, a fact indicative of somewhat highly specialized ecologic adaptations.

3. The usual home of the various species are cliffs, rocks, crags or steep banks, lava-flows, etc., all furnishing little soil and the sharpest of drainage.

4. Commonly a distinct preference is shown for northerly slopes or the partial shade of trees, etc.

5. Reasons for this preference may be need of drainage in a region where every summer-afternoon brings heavy downpours, coupled with the need for moisture during the prolonged rainless period during the winter months; and perhaps also the inability of *Echeveria* to compete successfully with aggressive vegetation as tall grasses, etc.

6. The apparent partiality for semi-shade may really be due to the moisture-requirements of seedlings.

7. Tall caudex and flowering-stem seem to have been developed in response to tall competing vegetation; the small stemless species nearly always occurring on bare cliffs or rocks.

8. Hairs and epidermal papillae are mostly found in species inhabiting hot and dry localities, and seem an evident adaptation enabling the plants to survive under these unquestionably adverse conditions.

9. Another device apparently designed to permit the species involved to survive an adverse dry season are the napiform roots, not previously recorded, found in such species as *E. mucronata, platyphylla* and *maculata*. The possible effect of grass fires should also be considered.

10. The spots or blotches said to be characteristic of *E. maculata* seem to be the consequence of thrips injury.

11. The most important factor limiting *Echeveria* in nature seems to be the numerous insect enemies; particularly the various leaf- and stem-miners, such as the lycaenid moth *Mitoura spinetorum cuyamaca* W. S. Wright.

12. The apparently excessive number of species inhabiting such a relatively small area is fully accounted for by the rugged topography of this region, with a consequent equally great variation in exposure, mois-

Edge of lavaflow near Esperanza, the home of *E. rubromarginata* and *E. akontiophylla*. *E. akontiophylla* Werdermann in its native habitat.

ture, temperature, etc., usually summarized as local climate.

13. Ordinarily only a single species inhabits any particular locality, and where two different kinds do occur together, they belong to different Series or Sections and always flower at different seasons.

14. In consequence of this last-mentioned fact no natural hybrids were found.

15. Several of the *Series* or groups formulated by the present writer from taxonomic considerations based on morphological peculiarities, were found to arise from exposure to the influence of a similar type of habitat, a most pleasant confirmation of our views.

16. Space is lacking for an extended list of associated plants, but most common and interesting among those found were *Nothoalaena bonariensis, Altamiranoa mexicana, Sedastrum spp., Sedum spp., Pinus spp., Quercus spp., Baccharis spp., Fuchsia spp.*, etc.

17. The various species collected were found at elevations from 5000 to 12,000 feet, ranging from the Humid Transition zone through the Lower or arid Transition to the Upper Sonoran and Lower Sonoran zones.

18. An incomplete list of the material collected here follows:

Crassulaceae seen in their native habitat.
Determinations provisional. (*living plants obtained)

*Echeveria akontiophylla**
*byrnesii**
*campanulata**
*crenulata**
coccinea
elegans (cultivated)
*fimbriata**
*gibbiflora**
*glauca**
*grandifolia**
*heterosepala**
*maculata**
*mucronata**
*nodulosa**
*nuda**
*platyphylla**
*pumila**
(*retusa* Lindley*)
*rubromarginata**
(*scopulorum**)
*secunda**
*simulans** (cult.)
*subrigida**
(*subsessilis**)
*tolucensis**
*Altamiranoa mexicana**
*scopulina**
(*Cremnophila nutans**)
*Sedastrum ebracteatum**
*painteri**
spp.*
Sedum bourgaei
confusum
diversifolium
dendroideum
greggii
frutescens
moranense
*longipes**
oxypetalum
praealtum (Cult.)
stahlii
spp.*.
*Thompsonella minutiflora**

Good road leading from Puebla to foot of Popocatepetl.

A few questions most commonly asked may be answered here. While located within the Tropic zone, much of Southern Mexico lies at an elevation of over 7000 feet, so that the climate is anything but hot, at least during the winter, and the nights are distinctly chilly. The principal difference of this climate from our Californian is the falling of the dry season into the winter months, and the rainy season into the warmer summer; this seems sufficient explanation for some of the observed preferences of *Echeveria* in our gardens, for sharp drainage in water and sufficient moisture during summer.

That the writer was able to get along most swimmingly without a word of Spanish is enough to dispose of any fancied language difficulty. Guides are available at reasonable rates. After sufficient enquiry, it is usually possible to find someone who knows the plants sought and where they may be found. Near Mexico City good roads are abundant, but the further one gets away from the larger cities and towns, the slower ones rate of progress usually becomes. However, continued improvement is taking place and with the completion this summer of the International highway from Laredo to Mexico City, travel should be much facilitated. Railroads are slow and trains infrequent, but furnish a cheap method of travel, particularly if one has no objection to travelling second class, which has the additional advantage of giving a more intimate view of native life. In the end, of course, ones hiking-ability is bound to be tested, and a good stout pair of shoes will be found useful. A warm overcoat is a necessity at the altitude of Mexico City where the nights are frequently rather cool.

The reception accorded visitors, with money to spend, is most cordial. Botanists and plant students may count on a most friendly welcome by the staff of the "Instituto Biologia" in Chapultepec Park. Cactologists, of course, will want more special guidance, to be had from the local collectors. In Mexico City the following two addresses should be noted: Sr. Christian Halbinger, la-Luis Moya 5.; and Sr. Otis McAllister, 2-A. de San Ildefonso, 48-Altos 5. The two best hotels are concededly the Hotel Regis and Hotel Geneva, with rates and service comparable to the better hotels in the U. S. In Cuernavaca, the Hotel Marik is both modern and American. Sr. Oestlund may be available here for advice to the plant-hunter.

As to costs of a trip, our personal experience is no criterion, since we were compelled

to economize time to the utmost, even regardless of expense and the risk of our neck. Numerous tours are now available, some for as low as $200 or less, but, of course, leave little latitude for special objectives. We have always felt more interested in results than in expenditure of either money or effort and are certainly of the conviction, first, that our trip was successful and worthwhile, and also that anyone else equally interested in plants, whether cacti, succulents, or others, will return home equally satisfied with the experience. In the hope that those who may be induced to follow in our footsteps may perhaps thank us for the inspiration by a little help with our work we append a list of the species of *Echeveria*, etc., we are still in need of for our studies.

Echeveria paniculata from Chihuahua.
cuspidata, from Saltillo.
walpoleana, from Las Canoas in San Luis Potosi.
tobarensis, from Tobar in Durango.
obtusifolia, from a mountain canyon above Cuernavaca.
oaxacana ined., from Mesa de Coscomati, Oaxaca.
gloriosa, from Cerrro de Santa Lucia, Puebla.
elegans (Oliveranthus) *variety*; from Cerro de Chicamole, Sra. Mixteca.
bifida, from "Barranca between Regla and San Bartolo."
humilis, from sandy hills near San Luis Potosi.
lutea, from Minas de San Rafael, San Luis Potosi.
palmeri, from high mountains about Alvarez, San Luis Potosi.
schaffneri, from sandy hills near San Luis Potosi, also Tomasopo Canyon.
racemosa, from Malpais de Naulingo, near Jalapa, Vera Cruz.
subalpina, from subalpine regions of Orizaba.
tenuis, from mountoin-top near Escobedo, Zacatecas.
Thompsonella platyphylla, Iguala, Guerrero.
Sedum clavifolia, Mt. Ixtaccihuatl, 14,000 feet.
Graptopetalum occidentale, Sinaloa?
pusillum, Durango?

We should be most happy to attempt the determination of any living *Crassulaceous* plants submitted to us.

ERIC WALTHER
2667 McAllister St., San Francisco.

NEW BOOKS

THE DESERT GARDEN—Native Plants of Phoenix and Vicinity by Frances L. Hamilton. Address The Desert Garden 909 N. T St., Phoenix, Ariz. $1.10 postpaid.

A handbook of the desert flora and cacti around Phoenix, Arizona, also useful for New Mexico and California desert flora. Contains botanical descriptions of about 150 species, a glossary, index by color, and nine drawings of plants described. Contains map of area studied. Sixty page booklet. Includes an interesting key to the families and a glossary of terms. Ten plants of the Cactaceae are included in these native plants of Phoenix.

CACTUS GROWING FOR BEGINNERS by Vera Higgins and H. T. Marrable. Blandford Press Ltd., 43 Blandford St., London, W. 1, England. Price 2s 6d. 84 pages of valuable information that will fill a definite need. The following chapters show how fully the subject is covered: Cultivation, Soil and Potting, Sun and Ventilation, Heating and Watering, Seed Raising, Cuttings and Grafts, Types of Cacti, How to Make a Collection, Insect Pests, Succulents Other than Cacti, Miniature Gardens, Summary of Operations. This book and THE STUDY OF CACTI, both by the same author, are two very valuable contributions to our succulent literature.

MEXICAN PLANTS FOR AMERICAN GARDENS by Cecil Hulse Matschat. 268 pages bound in cloth, 36 illustrations, Houghton and Miffin, N. Y. $3.50.

The 45 pages devoted to cacti are found under the chapter "Dwellers in the Sun" and are written in a very interesting style.

This book opens new horizons to the American gardener. Written by an expert, it gives the first full account of the most attractive Mexican plants and how they can be used in American gardens. Those suited to each climate—for outdoor growth, for apartment courts, patios, and terrace gardens—are all described, with full advice as to their culture. From a knowledge of some four hundred different types of Mexican flowers, shrubs, and vines, grown in all climates in Mexico, the author presents a vast amount of information, with brand-new ideas for the amateur and the expert, ideas adaptable to almost any situation. A description of the native environment of the plants enables the gardener to grow them successfully as they were grown in Aztec and Spanish gardens in the past. In fact, this volume gives to English readers the first comprehensive book yet written on the fascinating subject and will be invaluable to amateur or professional gardeners who are on the lookout for new ideas in plants and in garden arrangements.

"CALIFORNIA CACTUS"

100 pages and 85 illustrations, 1 in color, of the cactus native to California. 2 new species described. An attractive book reasonably priced at $1.50. Send check or money order to author, E. M. Baxter, Bellflower, California, or to Abbey San Encino Press, 6162 No. Figueroa St., Los Angeles. Immediate delivery.

Seventh Annual Cactus Show

Pasadena, Calif., May 9-12

The outstanding feature at the seventh annual cactus show of the Cactus and Succulent Society of America was the radical departure in staging compared to previous shows. Instead of the usual large collections of miscellaneous plants there was a definite classified arrangement by nearly every exhibitor; this encouraging fact combined with the accurate nomenclature and the excellent cultural condition of the plants made this show a credit to the hard work of the Show Committee.

Awards were based on the following points:

Maturity and condition of plants	30
Number of species in a collection	30
Staging	15
Rarity	15
Correct labelling	10

Special consideration given to plants in flower.

Grand sweepstakes was won by E. C. Hummel of Inglewood, Calif., with 1200 plants of which 950 were native of South America. The exhibit was arranged generically while the surface covering of the display was charcoal; the plant names were accurate and legible, and combined with many educational demonstrations. His large collection of grafts also won the silver trophy and proved his statements made in the article on grafting which appeared in the JOURNAL in Sept., 1934. Mr. Hummel uses grafts, not to produce freaks, but to produce growth, earlier maturity and for propagation. A group of 53 Echinopsis attracted many students. A demonstration of plant starvation showed a sickly yellow plant which was characteristic of under nourishment, nitrogen and iron being exhausted from the soil; repotting and new soil was shown to be the solution. Mr. Hummel is an advocate of the use of charcoal: "as a preventative of surface fungi and algea growths. 10% by volume in soil mixtures lessens soil retention of moisture and absorbs obnoxious gasses. It is a good seed cover and allows ample ventilation essential to eliminate damping off. It also absorbs more heat than lighter colored materials with less fluctuations of temperature." Mrs. Hummel, as well as Mr. Hummel, is a student and shares his knowledge and enthusiasm. The Alain White sweepstakes trophy will take the form of a microscope and we are looking forward to more interesting investigations for the JOURNAL by the Hummels.

Saxton and McDonald showed a formal arrangement of succulents colorfully displayed on a black earth bed, which was one of the most artistic arrangements in the show.

Seventeen year old Yale Dawson won the landscape prize showing a realistic planting of native Baja California specimen plants. His collection of plants from the Galapagos Islands included the rarest cactus an *Opuntia typica*, which won the Johnson trophy. Yale, with his schoolboy assistants, are to be congratulated for their excellent work.

Carl Seelbach showed large specimen plants, many in flower. A fine specimen of the Mexican *Pachycereus grandis* was shown, believed to be the only one on the Pacific Coast. Other interesting plants were three large monstrose Cerei—*Cereus peruvianus, C. caesius* and *C. repandus;* 15 Echinocerei in flower as well as flowering Gasterias and Aloes. An outstanding plant was a cluster of *Trichocereus schickendantzii* with 87 branches. A group unclassified Neomammillarias from Sonora and Sinaloa collected by Howard Gentry in 1923 was a high light of the Seelbach exhibit.

Dr. R. W. Poindexter showed the *Aloe ausana* pictured on the May JOURNAL cover. He also displayed all of the hybrids that have been described in his series on new originations in the JOURNAL. His *Gastrolea* hybrid took first in the open new origination class.

Mr. H. M. Wegener showed an Epiphyllum with copper petals shading to pink.

One of the finest exhibits from an educational standpoint was a collection of 260 different Opuntias including 30 collected by Dr. Rose. The arrangement was unique, being a vertical mounting of joints against a dark background. Because of the merit of this display Miss Kate Sessions of the California Pacific International Exposition moved the entire display to San Diego where it will be seen by thousands. It was the surprise of the show and represented weeks of work of our veteran perenial exhibitor, Carl Brassfield.

J. Eugene Harder, of Fontana, won first in the Junior General Collection. The excellent condition of the plants deserves credit.

Erwin Strong won the blue ribbon in the amateur division for his 120 named Neomammillarias. Fine charcoal set off this collection to excellent advantage.

The INTERNATIONAL EUPHORBIA SOCIETY won first in Euphorbias, the display being made with the choice plants of the various members. Four large plants were very spectacular: *Euphorbia similis, ingens, natalensis* and *ammak.*

Dr. R. L. Craig of Baldwin Park showed an outstanding collection of Neomammillarias—more than 250 species, all arranged by nativity: United States, 17; Baja California, 17; outside of the United States and Mexico, 7; unnamed species from Sonora collected by Howard Gentry, 10; all others native to Mexico. Dr. Craig has every available Neomammillaria and has all but 16 that were listed by Britton and Rose, but many of these were never seen or have been lost. Many new species found the last few years were included. Dr. Craig has done a splendid work.

Bob Frick had the best amateur collection of Mesembryanthemums.

The Steel collection of Epiphyllums contained many in flower and was the most spectacular display of the show.

Clarence L. Clum won the Johnson cup for the rarest succulent in the amateur division, a *Haworthia asperuscula.* Not satisfied with this honor, our Secretary captured the Poindexter trophy for the best new origination with a *Euphorbia cerei-*

formis hybrid. He also showed 65 Haworthias which captured another first.

James Hughes showed a fine collection of specimen plants strikingly displayed against a painted desert background. He had 15 Echinocerei in full flower.

The CACTUS EXCHANGE occupied a full half of one wing and cooperated to make the show a success. Their President, Mr. Grimes, and other members exhibiting were: Francis Wheeler (8 ribbons), Cecil Randelman, J. C. Andersen (winner of best general collection of succulents with a collection of 200 Aloes, Agaves, Gasterias and Sanseverias), the "Skinners" with some of their 30 new Kalanchoes, Al Schuck, Elmer Herman, Gertrude and James Beahm. The Exchange met at the show and Mr. Tegelberg gave a demonstration on grafting. Mr. Tegelberg carried home 20 ribbons—one of his most interesting plants was one of the two known *Echinocactus polycephalus* crests. One of the largest exhibits was Grijalva Cactus Nursery's 300 plants. Among them were 29 Trichocereus, and large collections of Cephalocereus, Lemaireocereus and Malacocarpus. A one foot *Stetsonia coryne* attracted many favorable comments.

Boyd L. Sloane won the cup for *Caralluma retrospiciens* which proved to be the rarest succulent in the open division.

H. L. Pellet won a cup for the best general amateur collection.

Fred Benedict showed some specimen plants of outstanding quality. Fred knows how to grow cacti or credit is due to the San Fernando climate.

A Cuban plant, *Dendrocereus midiflorus*, won the prize as the rarest cactus in the amateur division for Mrs. E. C. Guimenez-Lanier of Havana, Cuba.

Paul Olsen of Tucson, Arizona, brought some reptiles along with his plants, lending an interesting variety to the other exhibits.

Wright Pierce and Harry Johnson showed seedlings to prove that conservation rather than destruction of our desert flora is practical without sacrificing ones desire for interesting plants.

Major Arens showed 8 Malacocarpus and some rare Apricas.

Wm. Taylor Marshall seemed to have his name on most of the exhibits as the leader of a study group. Each member of this group in encouraged to specialize in one genus and their exhibits were arranged in that manner. Mr. Marshall had just returned from Sonora, Mexico, where he and Mr. Bristol collected many fine plants, four of these were *Pachycereus pectin-aboriginum, Cephalocereus alensis, Lemaireocereus montanus* and *L. thurberi;* these plants were 4 to 7 feet tall. A cluster of *Coryphantha salm-dyckianus* was found by Mr. Marshall which disclaimed the statement that this plant was not to be found on the Pacific slope of the water shed of Old Mexico.

Dr. A. D. Houghton showed an interesting hybrid of *Kalanchoe tubiflora* and *K. daigremontana. K. tubiflora* has entirely tubular leaves, if indeed they are leaves at all, as they may be only petioles. The other parent, *K. daigremontana* has a leaf composed of petiole and blade—the blade of the leaf curiously crenated with its proximal portion incurved. The hybrid has a definite petiole entirely similar to the whole leaf or phyllode of *K. tubiflora* and blade similar to the *K. daigremontana* parent. No better example of hybridization can be found of the total visable combination of characters of both parents.

The show committee under Dr. Poindexter's leadership did an excellent job and are deserving of much credit for putting on a show in the face of many difficulties. Clarence L. Clum, Edgar M. Baxter, Wm. J. Surganty all contributed weeks of their time towards making this show a success.

IMPORTANT NOTICE

The next issue of the CACTUS JOURNAL will contain the Index to Volume VI. The July issue will contain full instructions for binding this volume; please do not send in your JOURNALS until you have received the Index and see the notice.

RENEW YOUR MEMBERSHIP PROMPTLY

The July or August issue of the JOURNAL will be another illustrated issue similar to the January 1935 member which was so well liked for its many illustrations. You will not want to miss this issue nor to break the series containing Britton and Rose, Vol II. An expiration notice is sent independently of the JOURNAL and by prompt attention your JOURNALS will arrive without delay.

BOOKS

Mail Address: THE CACTUS JOURNAL, 6162 North Figueroa St., Los Angeles, Calif.

CACTUS—By A. J. Van Laren ..... $ 5.00
A companion volume to "Succulents" with the same imported color prints of 150 different cacti. Bound in cloth. Numbered edition of 1000 copies. In addition to the above, there are 500 sets of "Cactus" and "Succulents" bound in harmonious cloth bindings priced at $10.00 per set. "Succulents" sold separately for $7.50.

THE CACTACEAE, Vol. 1, as reprinted in one color in the Journal. An exact reprint of Carnegie Institute's contribution to cactus literature. Bound in heavy buckram $10.00

BOUND VOLUMES of the Cactus Journal, Vol. I, II, III, IV and V, are now on sale; these will be very valuable before many years, so take advantage of the opportunity at this time. Volume I, $25.00, Volume II, III, $9.00 each. Volumes IV and V, $6.00 each.

EDITOR'S NOTE

Only legitimate dealers are asked to advertise in the JOURNAL. If two or more proven complaints are received by the Society, no further advertising will be accepted from that dealer until all difficulties have been adjusted.

NEW 1935 CACTUS CATALOGUE

Thirty-two page, illustrated, descriptive list offering many new species as well as old favorites. Several pages of cultural notes. Free.

HOWARD GATES FAMOUS CACTUS GARDENS

Dept. C, Anaheim, Calif.

True *Selenicereus boeckmannii*, the pink form. This plant has been seen in bloom and determined by the eminent specialist, Dr. A. D. Houghton of San Fernando. A free climber which, on the South side of the house, will grow all over it with beautiful large pink flowers. Does well in greenhouse. Very Rare. Only a few to the first comers. Rooted cuttings. Each $2.00. Send cash with order.

CHARLES SHERFY
214 Newport Avenue
Long Beach, California

SPECIAL BARGAINS

Haageocactus acranthus 1½in., 15c; *Corryocactus melanotrichus*, 2in., 15c; *Pilocereus gounelli*, 1½in., 15c; *P. glaucescans* 1in., 10c.; *Cephalocereus catingicola* 1½in, 15c; *Cleistocactus baumanii columbrinus* 1¾in., 20c; *Cereus caesius* 1¾in., 15c; *C. hexagona* 1¾in., 15c; *C. alacriportanus* 2½in., 20c; *C. xanthocarpus* 2in., 15c; *Escontria chiotilla* 1½in., 10c; *Trichocereus lamprochlorous* 3in., 20c., 6in., 40c; *T. schickendantzii* 3in., 20c; *T. pasacana* 1¼in., 10c; *Oreocereus trolli* 1½in., 20c; *Opuntia santarita* 12ins., 20c; *Neomammillaria bocasana* 1in., 15c. Prepaid on orders of $1.00.

CHARLES L. CASS NURSERY
Pacific Beach, Calif.

Do you have the rare
CEPHALOCEREUS KEYENSIS?

Florida Giant Cactus; grows to a height of 25 ft. and 8 inches through. Fine, large tip cuts at $1.00 per foot; minimum order $5.00. Collecting Native Cacti my specialty. Correct botanical names.

J. D. MITCHELL
Sebring, Fla.

CACTUS AND SUCCULENT SEEDS
Fresh Euphorbia seeds just received from South Africa. Ask for free list.

R. W. KELLY
2410 La Rosa Drive, El Monte, Calif.

Every garden lover should grow GLADIOLUS TRISTIS. Remarkable species—deliciously scented—immune to thrip. Bulbs 75c per doz. Plant in Sept.—stands light frost.

R. W. POINDEXTER
1520 E. Rosecrans, Compton, Calif.

SPECIAL THIS MONTH

Five fine non-shrubby Mesembrianthemums: Bylia cana, Herreroa odorata, Nananthus vittatus, Pleiosilos simulans, Stomatium murinum. Postpaid $1.

KNICKERBOCKER NURSERY
Rt. No. 1, San Diego, Calif.

RARE CACTI AND SUCCULENTS
Wholesale and Retail

HOUGHTON GARDENS
14714 Chatsworth Dr., San Fernando, California
Send for free catalogue

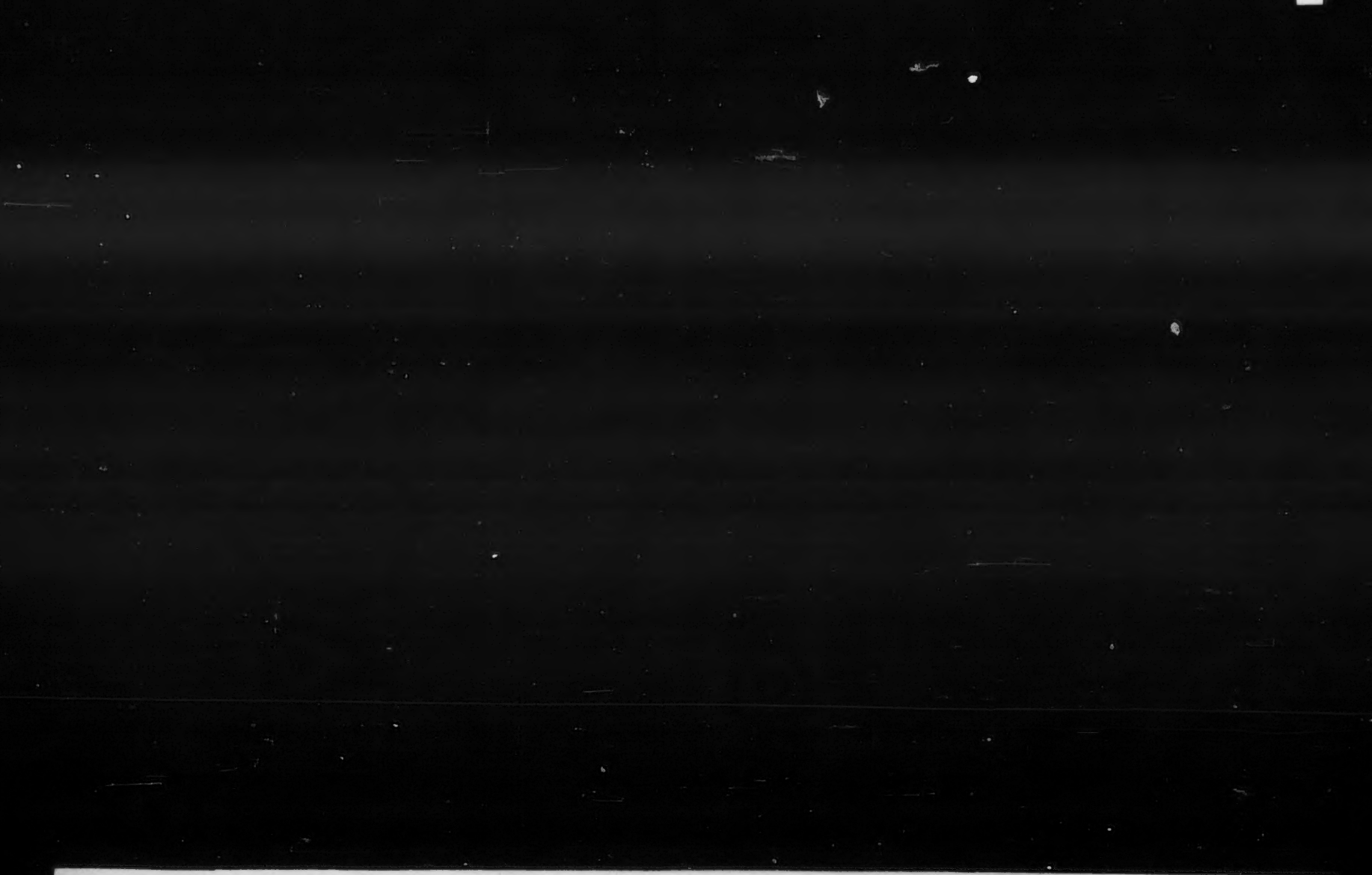
By special permit of the Mexican Government I can send to my customers
MEXICAN CACTI
and other Succulents. More than 200 species rooted and selected plants, easy to transplant. Moderate prices.

F. Schmoll, Cadereyta, Qro., Mexico.

SPECIAL OFFER IN LARGER CACTI FOR DISPLAY AND GARDEN

Echinocactus grusonii

The golden cactus. This plant with its golden yellow spines on its dark green body looks like a golden ball when the sun is shining on it, it is one of the most beautiful cacti, furthermore this plant grows easily and may be considered as one of the most wonderful decorative plants for garden and indoor purposes. It grows best in a soil composed of vegetable mould, clay, sand and gravel, in a sunny place. Plants from 16 up to 20 inches diameter.

Please ask for our illustrated catalogs, remitting 20 cents.

SCHWARZ & GEORGI
Apartado No. 7
San Luis Potosi, S.L.P.—Mexico